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MEASLES

The first bona fide measles (rubeola, hard measles) outbreak of the winter season was reported on December 19 from Harlowton. Dr. Richard Hopkins of the Preventive Health Services Bureau confirmed diagnosis of five cases of measles in high school-aged individuals and was able to trace the source of the outbreak to a single index case. To date, twenty-six cases have been reported from this outbreak. Single team members of both the high school basketball and wrestling teams each contracted measles during the outbreak. The possibility of spread of the disease to other towns via athletic contests must be considered. Serologic testing of the cases is now underway at the State Virus Laboratory. Attempts are also being made to isolate rubeola virus in tissue culture from throat swabs of the clinically diagnosed patients.

Measles is probably the most familiar of the common childhood diseases. It is endemic in urban America, causing fairly regular winter-spring epidemics. In such case, measles is encountered by most children before their tenth year. However, in more isolated, smaller communities, the picture may be quite different. Measles outbreaks may occur sporadically with children escaping exposure for many years. The disease may then be introduced into the community by visitors or via travel and contact outside of the community. When this occurs, young people and children previously unexposed to measles are stricken. The virus may spread via respiratory droplets rapidly and efficiently through family and community.

The clinical features of measles are characteristic and clinical diagnosis is usually straight-forward. After a 9-12 day incubation period, the prodromal period occurs marked by fever, cough, coryza, conjunctivitis and Koplik spots which appear on the inside of the cheek. These spots can be diagnostic in the early stage of the disease. Three days later the exanthem appears on the head and within 2 days spreads to the chest, trunk and the limbs. The rash consists of flat macules that fuse to form blotches which slowly fade. Recovery is usually quite rapid and complete. Shedding of the virus, which commences during the prodromal period, ceases about two days after the rash appears. Immunity is long-lasting.

Although measles often presents itself quite clearly clinically, care must be taken not to confuse its diagnosis with that of the other acute exanthems. Easily confused with measles at times are rubella, scarlet fever, exanthem subitum (roseola infantum) and Rocky Mountain spotted fever. These diseases may be differentiated by close evaluation of the four categories which characterize them : 1) the prodromal period, its length, signs and symptoms, 2) the rash, its point(s) of initiation, color and physical characteristics (confluent vs. discreet), 3) presence of pathognomonic or other diagnostic signs, and 4) laboratory diagnostic tests such as complement fixation, tissue culture isolation and hemagglutination inhibition.

While recovery from measles is usually rapid and complete, complications are common and can be severe. Most frequent are otitis media and pneumonia which may be attributed to secondary bacterial infections. Encephalomyelitis occurs somewhat less frequently and may leave in its wake sequelae including epilepsy and personality changes. Finally, in rare cases, measles virus has been implicated in the development of subacute sclerosing panencephalitis (SSPE) some years after an initial measles infection, causing progressive loss of cerebral function ending in spacticity, coma and eventual death.

With such complications well within the realm of possibility, the need for a comprehensive vaccination program is immediately evident. Presently, live attenuated vaccines are being administered with great success, achieving possibly life-long immunity through a single dose of vaccine given commonly at one year of age.

Finally, with laboratory diagnosis often playing an important part in diagnosis and/or confirmation of measles as well as distinguishing measles infection from those of other common exanthema, the procurement of proper specimens is important. For serologic diagnosis, an acute phase serum taken soon after the appearance of the rash and a convalescent phase serum taken two to three weeks later are necessary. With the proper sera, diagnosis via the hemagglutination inhibition test and the complement fixation test are possible upon demonstration of a four-fold or greater rise in the titer of the convalescent over the acute phase serum.

Virus isolation, while difficult, is also possible when a nasopharyngeal swab is taken during the period between onset of prodromal symptoms and the second day of the rash. The swab is bathed in sterile viral transport medium and the fluid is inoculated into primary Rhesus monkey kidney tissue cultures. These cultures are incubated for ten days and examined for cellular changes indicative of measles virus proliferation. Any viral isolates obtained in this manner may be tested further for identification.

All serum and swab specimens should be kept under refrigeration (not frozen) and submitted to the State Virus Laboratory as soon as possible.

John J. Williams, Virologist

REFERENCES

1) Benenson, Abram S., Control of Communicable Diseases in Man, 12th Edition, 1975, American Public Health Association, Washington, D. C.
2) Davis, Dulbecco, Eisen, Ginsberg and Wood, Microbiology, Second Edition, 1973, Harper and Rowe Publishers, Inc., Hagerstown, Maryland.
3) Fenner, Frank J., and David O. White, Medical Virology, Second Edition, 1976, Academic Press, New York, New York.
4) Klugman, Saul and Robert Ward, Infectious Diseases of Children, Fourth Edition, 1968, C. V. Mosby Company, St. Louis, Missouri.
5) Various Editors, The Merck Manual, 12th Edition, 1972, Merck, Sharp and Dohme Research Division of Merck and Company, Inc., Rahway, New Jersey.

BENCH TRAINING IN BACTERIOLOGY

As announced in the October Bulletin, bench training in bacteriology is available at the State Microbiology Laboratory. One student who recently received this instruction was Donna Swank, MT(ASCP) of Community Memorial Hospital, Sidney. Another student has been scheduled for January.

The training session includes a week of hands-on work suited to each student's needs, ranging from review of fundamental methods to advanced techniques in special determinative bacteriology. Instruction in mycobacteriology, mycology and parasitology can also be included.

The bench training course is particularly useful for technologists in small laboratories who wish to review their current procedures, develop realistic priorities for their microbiology sections, establish quality assurance programs and/or add to their technical capabilities.

Training sessions can be arranged by contacting Dr. Douglas Abbott, Supervisor of Clinical Bacteriology (449-2642)

ANNOUNCEMENTS

Future editions of this Bulletin will include announcements of workshops, seminars, meetings and other events of interest to clinical laboratories in Montana. If you have announcements you wish to publicize, please supply us with the necessary information, and we will include them in the Laboratory Bulletin.

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